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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,470	11/10/2003	Robert L. Fair	112056-0123	5732
24267	7590	06/29/2006	EXAMINER	
CESARI AND MCKENNA, LLP			WALTER, CRAIG E	
88 BLACK FALCON AVENUE			ART UNIT	
BOSTON, MA 02210			PAPER NUMBER	
			2188	

DATE MAILED: 06/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/705,470	FAIR ET AL.	
	Examiner	Art Unit	
	Craig E. Walter	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/3/04, 6/27/05, 7/14/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 3 December 2004 was fully considered by the examiner.
2. The information disclosure statements filed on 27 June 2005 and 14 July 2005 fail to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because of the following reasons:

PTO/SB/08A form dated 27 June 2005; cited reference 26, the document provided does not include page numbers, therefore the Examiner cannot conclusively determine if the pages provided are the ones as cited on the form.

PTO/SB/08A form dated 27 June 2005; cited reference 31, the document provided appears to contain different page numbers than cited on the form.

PTO/SB/08A form dated 27 June 2005; cited reference 38, not all pages cited on the form appear in the document provided.

PTO/SB/08A form dated 27 June 2005; cited reference 41, the document provided does not include page numbers.

PTO/SB/08A form dated 27 June 2005; cited reference 46 (page 3 of 5), the document provided appears to contain different page numbers than cited on the form.

PTO/SB/08A form dated 27 June 2005; cited reference 46 (page 4 of 5), appears to be a redundant entry on the form.

PTO/SB/08A form dated 27 June 2005; cited reference 55, page 116 is not included in Applicant file and it appears to be a redundant entry as cited reference 24 in the PTO/SB/08A form dated 14 July 2005.

PTO/SB/08A form dated 27 June 2005; cited reference 59, the document provided appears to contain different page numbers than cited on the form.

PTO/SB/08A form dated 27 June 2005; cited reference 65, the document provided appears to contain different page numbers than cited on the form.

PTO/SB/08A form dated 14 July 2005; cited reference 24, page 116 is not included in Applicant file.

They have been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Drawings

3. The drawings were received on 10 November 2003. These drawings are deemed acceptable for examination.

Specification

4. The abstract of the disclosure is objected to because of the following:

The word "a" should be inserted between the words "to" and "disk" on line 7 of the abstract.

All extraneous markings, such as "H:\112\0..." should be removed from the abstract.

Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The attorney docket numbers referenced on lines 5 and 8 (page 1) of the specification should be replaced with the Application control numbers for these Applications. Those numbers are 10/705,025 and 10/705,493.

Appropriate correction is required.

Claim Objections

6. Claims 16-19 are objected to because of the following informalities:

As for claim 16, the word "a" should be inserted between the words "to" and "disk" as recited on line 2 of this claim. A similar objection applies to claim 18.

As for claim 18, the word "raw" should be inserted between the word "the" and "data" as recited on line 2 of the claim for clarity.

Claims 17 and 19 are objected to for further limiting claim 16.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the buffer control structure" and "the raw data buffer" in lines 1-2 of the claim. There is insufficient antecedent basis for this limitation in the claim, as it is unclear if the control structure and data buffer set forth in this claim is referring to the "a buffer control structure" and "a raw data buffer" in claim 2, or the ones recited in claim 1. The claim will be further treated on its merits based on the assumption that the control structure recited in claims 3 and 2 are the same as the one recited in claim 1. A similar assumption applies to the raw data buffer.

Claim 11 recites "the file system buffer" in line 9 of the claim, however "a file system buffer" is not previously set forth within the claim.

Claim 20 recites "the file" in line 4 of the claim, however "a file" is not previously set forth within the claim.

As for claim 1, the phrase "receiving a write operation directed to a file" renders the claim indefinite, as it is unclear to the Examiner if Applicant intended this limitation to recite an operation to write *to a file*, or a write operation for writing *the file itself*. More specifically, as currently recited, the write operation could be directed to either writing to a file, or directed to writing the file itself. The claim will be further treated on its merits based on the latter assumption.

Claims 2, 4-10 and 12-19 are rejected for inheriting the deficiencies of claim 1, and 11 respectively.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-5, 11 and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Hitz et al. (US Patent 5,819,292), hereinafter Hitz

As for claims 1 and 20, Hitz teaches method for detecting leaked buffer writes between a first consistency point and a second consistency point, the method comprising:

receiving a write operation directed to a file (Hitz's invention is directed to managing changes to a file system. In his disclosure, Hitz describes a Write Anywhere File-System Layout (WAFL) directed to writing new data (i.e. files) to

the file system. The files can write new inode files to the file system – col. 4, lines 6-32);

creating a data buffer associated with the write operation (referring to Fig. 10, when a new incore inode is created (1010A), an area is allocated to the inode in order to store information, a WAFL buffer structure (1010B), a set of pointers (1010C), and an on-disk inode (1010D). The pointers point to the newly created indirect WAFL buffers (1020) – col. 7, lines 5-41). Note the area needed to store these elements is created (i.e. allocated) as Hitz explicitly describes his invention as writing new data to unallocated blocks on a disk – see abstract; and

writing a buffer check control structure to a raw data buffer associated with the data buffer (again both the buffer data structure (1010B), and the pointers (1010C) are stored and associated with the inode, hence comprise the raw data buffer associated with the data buffer – col. 7, lines 5-41).

As for claim 11, Hitz teaches a method for detecting leaked buffer writes between a first consistency point and a second consistency point, the method comprising steps of:

selecting a data buffer (a buffer is selected to store the inode which contains the meta-data file – col. 9, lines 19-49. The meta-data file comprises, *inter alia*, a block map – col. 5, lines 48-59. Hitz further describes the block map as consisting of information for up to 20 snapshots. Since the consistency points are classified as points after a snapshot, the block map comprises the

information needed to ascertain the consistency point number – col. 4, lines 6-43);

determining if the selected data buffer includes a buffer check control structure (the system inherently makes a determination if the buffer check control structure within an inode is present simply by referring to the data recorded within it);

determining, in response to the selected data buffer including a buffer check control structure, if a consistency point number within the buffer check control structure is correct, and if so, performing a write operation of the file system buffer (before converting to a new consistency point, the system will perform a check sum on the fsinfo structure (containing the root inode which comprises the consistency point information) to determine if the one of the copies has been corrupted in some way. Once consistency is determined, the system will continue to write the new node to the disk – col.12, lines 11-48).

As for claim 2, Hitz teaches the method of claim 1 wherein the step of creating the data buffer further comprises the step of creating a buffer control structure and a raw data buffer (the structures previously described in the rejection of claim 1 illustrate the buffer control structure and raw data buffer which are created when the inode is created (i.e. allocated)).

As for claim 3, Hitz teaches the method of claim 2 wherein the buffer control structure comprises a pointer to the raw data buffer (the buffer structure contains pointers to reference the 16 buffer pointers (1010C) - col. 7, lines 5-16).

As for claim 4, Hitz teaches the method of claim 1 wherein the step of writing the buffer check control structure to the raw data buffer further comprises the steps of:

- creating the buffer check control structure (again, the buffer check control structure is created upon allocation of the inode); and

- overwriting a portion of the raw data buffer with the buffer check control structure (a portion of the raw data buffer is comprised of the buffer structure (1010B)).

As for claim 5, Hitz teaches the method of claim 1 wherein the step of writing the buffer check control structure to the raw data buffer further comprises the steps of:

- creating the buffer check control structure (again, the buffer check control structure is created upon allocation of the inode); and

- associating the buffer check control structure to the raw data buffer in a contiguous block of memory (the buffer check is associated with the raw data buffer as it contains pointers that reference a block within the buffer itself – col. 7, lines 5-41. Note by definition a block of data is contiguous; therefore the information is inherently stored contiguously. Additionally, Fig. 10 depicts the information as being stored contiguously in blocks).

As for claim 15, Hitz teaches the method of claim 11 wherein the step of determining if the consistency point number is correct further comprises the step of determining if the consistency point number within the buffer check control structure equals a consistency point number identifying a current consistency point (col. 11, line 62 through col. 12, line 38 – the system maintains two identical copies of the root inode

containing the information of the consistency point of the system. The system can then compare the current root inode with the copy to determine if the consistency point is accurate, and that no failure has occurred).

As for claim 16, Hitz teaches the method of claim 11 wherein the step of performing a write operation further comprises a step of writing a set of raw data within the data buffer to disk (all data written is written to the disk – see abstract. The data is buffered before flushed and written to the disk).

As for claim 17, Hitz teaches the method of claim 16 wherein the raw data comprises the buffer check control structure (both the buffer data structure (1010B), and the pointers (1010C) are stored and associated with the inode, hence comprise the raw data buffer associated with the data buffer – col. 7, lines 5-41).

As for claim 18, Hitz teaches the method of claim 16 wherein the step of performing the write operation further comprises a step of removing the buffer check control structure from the data before writing the file system buffer to disk (the buffered data is flushed (i.e. removed) from the buffer before it is written to the newly allocated regions on the disk - col. 12, lines 9-24).

As for claim 19, Hitz teaches the method of claim 16 wherein the step of performing the write operation comprises the step of writing only the raw data within the file system buffer to disk (col. 12, lines 9-24 – the raw data is the only data flushed to the disk during the update).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 6-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitz (US Patent 5,819,292) as applied to claims 1 and 11 above, and in further view of Ganesh et al. (US Patent 6,192,377 B1), hereinafter Ganesh.

As for claim 6, though Hitz teaches storing consistency point numbers in the buffer check control structure, he fails to further teach storing one or more magic numbers.

Ganesh however teaches an apparatus for determining whether a transaction can use a version of a data item, in which he describes entries in data blocks as containing an index number (i.e. magic number). Also note that Ganesh additionally teaches a consistency point number (i.e. snapshot number) – col. 4, lines 33-41.

As for claims 7, 8, 10 and 13-14, though Ganesh does not explicitly teach the magic number as comprising either a 64-bit value, two 32-bit values, nor the consistency point number as comprising a 32-bit value, such limitations are merely a matter of design choice and would have been obvious in the system of Ganesh. These limitations fail to define a patentably distinct invention over Ganesh since both the invention as a whole and that of Ganesh's are directed to storing a magic number used

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to uniquely identify the data block; and storing a consistency number, used to track certain points in time the system maintained a consistent state.

As for claim 12, though Hitz teaches determining if the buffer contains a buffer check control structure he fails to teach storing a magic number in said structure.

Ganesh however teaches determining if one or more magic values are within the data buffer, as his system functions as to check the updated version of the block by determining the index (i.e. magic) number of the block (col. 4, lines 33-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention for Hitz to further include Ganesh's apparatus for determining whether a transaction can use a version of a data, into his own file system. By doing so, Hitz would have a means of more quickly and reliably examining and determining which particular version of updated data blocks to use in a requested transaction, which in turn would require fewer system resources, making his system overall more efficient, as presently taught by Ganesh in col. 4, lines 42-64.

As for claim 9, Hitz teaches his consistency point number as identifying a current consistency point (again, the most recently recorded consistency point is indicative of the system's most current point of consistency).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

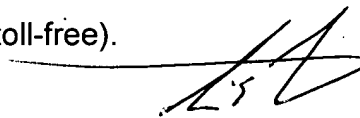
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Duvillier et al. (US PG Publication 2002/103819 A1) teach a technique for stabilizing data in a non-log based information storage and retrieval system.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig E. Walter whose telephone number is (571) 272-8154. The examiner can normally be reached on 8:30a - 5:00p M-F.

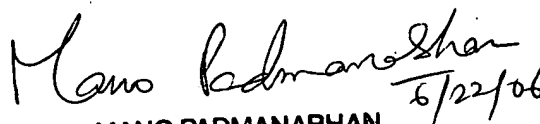
12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Craig E Walter
Examiner
Art Unit 2188

CEW



MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER
6/22/06